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"The future will depend on our wisdom not to replace one poison with another."
National Pediculosis Association[®], Inc.

Lindane in New York

New York Ban Lindane Campaign

Niagara Falls Environmental Impact
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Below is just the tip.

United States Environmental Protection Agency

SUPERFUND

The Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by the U.S. Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Over five years, \$1.6 billion was collected and the tax went to a trust fund for cleaning up abandoned or uncontrolled hazardous waste sites.

CERCLA's mandate included:

- established prohibitions and requirements concerning closed and abandoned hazardous waste sites;
- provided for liability of persons responsible for releases of hazardous waste at these sites; and
- established a trust fund to provide for cleanup when no responsible party could be identified.

The law authorizes two kinds of response actions:

- Short-term removals where actions may be taken to address releases or threatened releases requiring prompt response.
- Long-term remedial response actions that permanently and significantly reduce the dangers associated with releases or threats of releases of

hazardous substances that are serious, but not immediately life threatening. These actions can be conducted only at sites listed on EPA's National Priority List (NPL).

CERCLA also enabled the revision of the National Contingency Plan (NCP) . The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the NPL.

SUPERFUND WASTE SITES

National Priority List

The Hyde Park Landfill is an inactive 15 acre hazardous waste landfill located in the northwest corner of the Town of Niagara, New York several blocks from a five hundred (500) home neighborhood. The Site operated as a disposal site for Hooker Chemicals and Plastics Corporation [now known as Occidental Chemical Corporation (OxyChem)] from 1953 to 1975, receiving approximately 80,000 tons of hazardous chemical wastes. The predominant wastes placed at Hyde Park were chlorinated organics . Other wastes include hexachlorocyclo- pentadiene (C-56), trichlorophenols, and chlorinated benzofluorides.

Dioxin is also known to be present. Approximately 0.6 to 1.6 tons of 2,3,7,8 - Tetrachlorodibenzo-P-Dioxin (TCDD) is believed to have been dumped at this site.

The Niagara River is located two thousand (2000) feet to the north-west of this site. It is surrounded by other industrial facilities and property owned by the New York State Power Authority.

Monitoring data show that surface water and ground water have been contaminated by wastes leaching from this landfill. Dioxin has been found in the sediment taken from Bloody Run Creek, which drains the site. This creek runs through the residential community and discharges into the Niagara River gorge.

Bloody Run Creek, the drainage basin for the landfill area, flows from the northwestern corner of the landfill. The creek eventually flows into storm sewers and down the Niagara Gorge into the Niagara River. The site is located a few blocks east of a 500 home residential community. Approximately 3,000 people are employed by the industries near the site. All of the industries and most of the residences are connected to a municipal water supply system. Three residences obtain drinking water from private wells, but these residences are not believed to be in the path of contaminated groundwater that is moving away from the site.

The groundwater is contaminated with volatile organic compounds (VOCs) and dioxin from former disposal activities. Bloody Run Creek sediments, surface water were contaminated with VOCs all the way to the Niagara Gorge until

their removal in 1993.

Potential health threats include inhaling, direct contact, and accidentally ingesting water from Bloody Run Creek and the Niagara Gorge face. Another possible threat would be the consumption of contaminated fish from Lake Ontario. Although groundwater is contaminated, there are no known uses of groundwater within the area, so it is unlikely that people would be exposed to groundwater contaminants. Access to the landfill is restricted by a fence and a 24-hour guard.

This site is being addressed through Federal Government and potentially responsible parties' actions.

Threats and Contaminants

The groundwater is contaminated with volatile organic compounds (VOCs) and dioxin from former disposal activities. Bloody Run Creek sediments were contaminated with VOCs until their removal in 1993 and surface water of the Niagara Gorge Face is contaminated with VOCs. Potential health threats include inhaling, direct contact, and accidentally ingesting water from Bloody Run Creek and the Niagara Gorge face. Another possible threat would be the consumption of contaminated fish from Lake Ontario. Although groundwater is contaminated, there are no known uses of ground water within the area, so it is unlikely that people would be exposed to groundwater contaminants. Access to the landfill is restricted by a fence and a 24 hour guard.

This ignores the fact that most of New York State's surface waters, including the Niagara River and Lake Ontario, are replenished by groundwater.

The former drainage stream of the landfill, Bloody Run Creek, which flows into the Niagara River, was historically contaminated with organic chemicals, including dioxin.

More than \$56-million has been spent trying to contain the chemical soup in this landfill which has all the natural attenuation of a flow-through tea bag. There are one overburden and two bedrock aquifers under the site which flow generally toward the Niagara River Gorge. The bedrock is fractured carbonate and shale. Contaminants have migrated from the site in both aqueous and non-aqueous phases, and dioxin has been found in groundwater seeping to the river from the Gorge face 1,600 feet to the northwest. The site has been capped and fenced off. The installation of a remediation system in 1991 in the overburden has stopped contaminants migrating off-site in the overburden; however, how much may be migrating below this is unknown. To date, 234,000 gallons of DNAPL have been extracted at the site.

The Love Canal Landfill is a 16-acre landfill in the southeast corner of the

City of Niagara Falls, New York, about 0.3 mile north of the Niagara River. In the 1890s, a canal was excavated to provide hydroelectric power. Instead, it was later used by Hooker Chemical and Plastics Corporation (now Occidental Chemical Corporation) for the production of chlorine and caustic soda.

Hooker Chemical & Plastics Corporation used this abandoned unlined canal for disposal of over 21,000 tons of various chemical wastes. Dumping ceased in 1952, and in 1953 the disposal area was covered and deeded to the Niagara Falls Board of Education. Extensive development occurred near the site, including construction of an elementary school and numerous homes.

The solid and liquid wastes deposited into the canal included acids, chlorides, mercaptans, phenols, toluenes, pesticides, chlorophenols, chlorobenzenes, sulfides and dioxin tainted trichlorophenols. Metal waste included arsenic, chromium and lead.

Problems with odors and residues, first reported in the 1960's, increased during the 1970's, as the water table rose, bringing contaminated groundwater to the surface.

Studies indicated that numerous toxic chemicals had migrated into the surrounding area directly adjacent to the original disposal site. Runoff drained into the Niagara River, approximately 3 miles upstream of the intake tunnels for the Niagara Falls water treatment plant. Dioxin and other contaminants migrated from the Love Canal landfill to the sewers, which had outfalls into nearby creeks.

In 1978 and 1980, President Carter issued two environmental emergencies at Love Canal. As a result, approximately 950 families were evacuated from a 10squareblock area surrounding the canal. The Federal Emergency Management Agency (FEMA) was directly involved in the residential relocation activities.

In 1980, the neighborhoods adjacent to the Site were identified as the Emergency Declaration Area (EDA) which is approximately 350 acres and is divided into 7 separate areas of concern. Approximately 10,000 people are located within a mile of Love Canal; 70,000 people live within 3 miles. The area is served by a public water supply system; the City of Niagara Falls water treatment plant serves 77,000 people. The Site is 1/4 mile north of the Niagara River. The contamination problem discovered at Love Canal ultimately led to the passage of federal legislation, governing abandoned hazardous waste sites.

Between 1977 and 1980, New York State and the Federal government spent about \$45 million at the site: \$30 million for relocation of residents and health testing, \$11 million for environmental studies, and \$4 million for a demonstration grant (under the Resource Conservation and Recovery Act) to build a leachate collection and treatment system. was an open trench that was filled with hazardous chlorinated organic wastes from the Hooker Chemical Plant in Niagara Falls, New York during the 1940s and 1950s. Unfortunately, a residential area and elementary school were constructed immediately adjacent

to the former landfill (three blocks long) in the 1960s, resulting in an environmental disaster that eventually prompted the initiation of the Superfund Legislation in the United States.

A Secondary site of the Love Canal Super Fund clean-up has also been identified. It is an inactive hazardous waste site comprised the 19-acre 93rd Street School site. This sub-site is located less than one mile northwest of the Love Canal disposal area and is within the Love Canal emergency declaration area.

This site features include the 93rd Street School and adjacent vacant land. This site is bordered by Bergholtz Creek to the north and residential properties to the east, west, and south. From 1942 to 1953, Hooker Chemicals and Plastics Corporation (now Occidental Chemical Corporation) disposed of over 21,000 tons of various chemicals including at the Love Canal site.

In 1950, after the site was deeded to the City of Niagara Falls Board of Education, the 93rd street school was built. In 1954, a second school, the 99th Street School, was built adjacent to the mid-portion of the Love Canal.

Before construction of the 93rd street school, a drainage swale had crossed the site. In 1954, the site was graded to its present contours with approximately 3,000 cubic yards of fill materials including fill from the 99th street school. The fill material is reported to contain fly ash and BHC (a pesticide) waste.

During the mid-1970's, contaminated leachate migrated to the surface of the canal into to some residential basements adjacent to the canal, and through sewers to area creeks. Those homes have been demolished, and the sewers and creeks in the Love Canal emergency declaration area have been remediated.

In 1980, the 93rd Street School was closed because of public health concerns related to the potentially contaminated fill material. Investigations conducted in 1988 revealed the presence of hazardous contaminants in the soil. During previous investigations, it was determined that low level contamination present in the ground water compared to the ground water quality in the area and did not pose an exposure threat to the population.

On December 21, 1995, a consent decree, as a cost recovery settlement between the United States and OCC was lodged with the United States District Court. As part of the settlement, OCC and the United States Army have agreed to reimburse the federal government's past response costs, related directly to response actions taken at the Site. The primary portion of OCC's reimbursement is \$129 million; OCC has also agreed to reimburse certain other federal costs, including oversight costs, and to make payments in satisfaction of natural resource damages claims. In a second part of this decree, the United States Army agreed to reimburse \$8 million of the federal government's past response costs; these funds have now been directed specifically into EPA Superfund and FEMA accounts.

Also, \$3 million of the settlement funds will be directed, over a five-year project period, to the Agency for Toxic Substances and Disease Registry

(ATSDR) for the development of a comprehensive health study using the Love Canal Health Registry. ATSDR has awarded a grant to the NYSDOH to conduct this study, which is currently in its third year of development.

Threats and Contaminants

As a result of the landfill containment, the leachate collection and treatment system, the groundwater monitoring program and the final disposal of site-related contaminants, the Site does not present a threat to human health and the environment.

Also as with other sites in the area, the Love Canal "cleanup" has been one of containment rather than excavation. In a series of actions that set the pattern for other remediation in Niagara Falls, the site has been capped and a slurry wall has been installed. Storm and sanitary sewers have been decontaminated, and creek sediments scraped up. A pump and treat system with monitoring wells has been established, and an on-site facility treats contaminants that are recovered from groundwater pumping. But the hazardous wastes which gained so much notoriety in media reports in the 1970s remain buried in the unlined landfill.

The 102nd Street Landfill consists of two land parcels totaling 22.1 acres. Occidental Chemical Corporation, formerly Hooker Chemical and Plastics Corporation, owns 15.6 acres, and the remaining 6.5 acres are owned by Olin Chemical Corporation.

The site is located adjacent to the Niagara River and south of the Love Canal. A portion of the filled area of the site is an extension of the original Love Canal excavation. The larger portion of the landfill was operated from 1943 until 1971. During that time, about 23,500 tons of mixed organic solvents, organic and inorganic phosphates, and related chemicals were deposited at the landfill. Brine sludge, fly ash, electrochemical cell parts and related equipment, and **300 tons of hexachlorocyclohexane process cake, including lindane, were deposited at the site.**

The smaller portion of the site operated as a landfill from 1948 to about 1970, during which time 66,000 tons of mixed organic and inorganic chemicals were deposited. In addition, about 20,000 tons of mercury brine and brine sludge, more than 1,300 tons of a mixture of hazardous chemicals, 16 tons of mixed concrete boiler ash, fly ash, and other residual materials were disposed of at the site.

Griffin Park, with the exception of the boat-launch area, has been closed to the public. There is limited residential development to the east and west of the Love Canal Emergency Declaration Area.

Threats and Contaminants

Ground water contains volatile organic compounds (VOCs) including benzene and toluene; semivolatile organics such as chlorinated benzenes, phenols, and chlorophenols; pesticides; chlorinated dioxins and furans; and heavy metals including arsenic, cadmium, and mercury. Niagara River sediments contained semivolatile organics, pesticides, and mercury. Soils and fill contain VOCs, semivolatile organics, pesticides, chlorinated dioxins and furans, metals, and phosphorus. The storm sewer contained VOCs, semivolatile organics, pesticides, and mercury. Onsite cleanup workers risked harmful exposure through accidental ingestion of contaminated soils; drinking ground water; or by inhaling and coming in direct contact with contaminated soils, ground water, and sediments. People also may be at risk by eating contaminated fish from the river. The most significant offsite health threat was from contaminants that became airborne during work activities at the site. There is no public access to the site.

The Forest Glen Subdivision is a 39-acre site that was used for the illegal dumping of industrial waste from the 1950's through the 1970's. In 1973, the site was purchased by Niagara Falls USA Campsites Corporation and developed into a mobile home subdivision. Evidence of past waste disposal became apparent during the installation of utilities in 1973. The Niagara County Health Department and the New York State Department of Environmental Conservation requested that EPA conduct an initial site investigation in 1987. Soil sampling results in 1988 and 1989 revealed elevated levels of benzothiazole, aniline, phenothiazine and other hazardous wastes.

Approximately 150 people lived in the Forest Glen Subdivision. The area surrounding the site is used for residential and commercial purposes. Vacant land, which is heavily vegetated, is located to the north and east of the site. The mobile home park was serviced by a public water system. East Gill Creek flows along the edge of the trailer park.

Soils on site are contaminated with polycyclic aromatic hydrocarbons (PAHs) and semi-volatile organic compounds. There was a potential risk to human health from accidentally ingesting or coming in contact with contaminated soils. Residents of the trailer park could have been exposed to high levels of contamination through normal work or play activities. The trailer park floods during periods of spring snowmelt, which presents a moderate potential for contaminants to move to drainage ditches that surround the site.

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Hooker Chemical's S-Area Landfill covers 8 acres on the Buffalo Avenue Plant in Niagara Falls, New York. The plant was owned and operated by Hooker Chemicals and Plastics Corporation (now owned by Occidental Chemicals Corporation).

From 1947 to 1975, Hooker Chemical Company dumped approximately 65,000 tons of inorganic and organic wastes at S-Area, which is built on partially reclaimed land from the Niagara River. These wastes include: hexachlorobutadiene (C-46), hexachlorocyclopentadiene (C-56), chlorinated benzenes, chlorinated toluenes, trichlorophenols, benzene, toluene and pesticides such as 2,3,7,8-TCDD.

The landfill lies atop approximately 30 feet of soil, clay, till, and manmade fill on an area reclaimed from the Niagara River. Beneath these materials is fractured bedrock. Hooker Chemical & Plastics Corporation disposed of approximately 63,000 tons of chemical processing wastes into the landfill from 1947 to 1961. The landfill also was used by Occidental Chemical Corporation for disposal of other wastes and debris, a practice that ended in 1975. Two lagoons for non-hazardous waste from plant operations were located on top of the landfill and were operated under New York State permits until 1989, when Occidental Chemical discontinued operating these lagoons. During an inspection of this site in 1969, chemicals were found in the bedrock water intake structures. In 1978, sampling of the structures and bedrock water intake tunnel revealed chemical contamination. The site is located in a heavily industrialized area of Niagara Falls. There is a residential community of approximately 700 people within 1/4 mile northeast of the site.

Both surface water and ground water are contaminated. Chemicals have migrated through the bedrock and overburden to adjacent areas. Traces of S-Area chemicals have been detected in the finished drinking water from Niagara Falls' water treatment plant, which is about 200 yards east of S-Area. This plant serves 77,000 people. Contaminated run-off and ground water flow into the Niagara River.

The Department of Justice, on behalf of EPA, has brought a Federal civil action against Occidental Chemical Company seeking injunctive relief.

Threats and Contaminants

On and offsite ground water and soil are contaminated with toxic chemicals occurring as both aqueous (water soluble) phase liquids (APLs) and nonaqueous (immiscible) phase liquids (NAPLs). These chemicals include

primarily chlorinated benzenes. Dioxin is also present in ground water at trace levels. The main health threat to people is the risk from eating fish from the lower Niagara River/Lake Ontario Basin. Consumption of drinking water from the City's DWTP is not presenting health risks at present. However, the site, because of its proximity to the DWTP, presents a potential public health threat to the consumers of drinking water from the plant.

The Niagara County Refuse Site is an inactive 50-acre landfill in Wheatfield, New York. The landfill was operated by the county from 1968 until 1976. Large amounts of industrial waste chemicals are alleged to have been buried on the site. Analysis of leachate and sediments detected PCBs, chlorinated organics, and heavy metals. Contaminated- run-off flows into Black Creek and into the Niagara River about 5 miles upstream from the water intake that helps supply water to the 77,000 residents of Niagara Falls. Organic vapors are coming from the site, which is within 0.3 mile of private residences.

Threats and Contaminants

Site media (soil, groundwater, surface water, sediment) contain volatile organic compounds (VOCs), semi-volatiles, pesticides, and heavy metals. Migration of these substances from the site is mitigated by the favorable geologic characteristics of the site. The principal threats at the site are created by leachate seeps which form a potential exposure route to ecological receptors. There is also evidence that the soil and clay cap has deteriorated in spots, raising the potential for release of VOCs and possible surface water erosion of wastes. The principal risk to human health is a potential future risk from the ingestion of groundwater, should drinking water wells be installed adjacent to the site.

*** The Niagara River** is a 60-kilometer (37-mile) river that runs from Lake Erie to Lake Ontario. Divided into upper and lower reaches by Niagara Falls, it provides 83 percent of the total tributary flow to Lake Ontario. The Niagara River and, ultimately, Lake Ontario, source of drinking water for more than 4.5-million people. It serves as a source for drinking water, fishing grounds, and vacation spots. It generates electricity, and provides employment to millions of people. Unfortunately, the River is also the recipient of toxic wastes that pollute its waters and prevent us from fully enjoying its beneficial uses.

The River drops close to 100 meters (328 feet) along its course, most of which is at Niagara Falls. The natural shoreline of the River consists of low banks in the upper portion of the River and a deep gorge cut through sedimentary deposits in the lower River below Niagara Falls.

Several tributaries flow into the River from the U.S. and Canada, but they contribute only a small fraction of flow to the River.

On the Canadian side, land uses within the watershed are dominated by agriculture (32 percent), abandoned agricultural land (23 percent), urban land (23 percent), and forests (16 percent).

On the U.S. side, farmland and forests are found in the upper parts of the watershed, but the lower parts are predominantly urban. Large urban centers along the River include Fort Erie and Niagara Falls in Ontario, and Buffalo and Niagara Falls in New York.

The Niagara River has been declared an AOC as a result of excessive toxic chemicals in the water, sediment contamination, fish edibility restrictions, the incidence of tumors in fish, degraded benthos, and elevated phosphorus levels. Sources of pollution include industry outfalls, sewage treatment plants, other point sources, and non-point sources. Wetlands near these sources are vulnerable to eutrophication and contamination from toxic chemicals.

Since 1987, the Niagara River has been the focus of attention for four environmental agencies in Canada and the U.S., referred to as The Four Parties. They are:

*Environment Canada,
U.S. Environmental Protection Agency,
Ontario Ministry of the Environment
New York State Department of Environmental Conservation*

In February 1987, the above listed government agencies signed a Declaration of Intent (DOI). The Four Parties signed a Niagara River Declaration of Intent, pledging cooperation to achieve significant reductions of toxic chemical pollutants in the Niagara River. The Declaration of Intent and a work plan form the Niagara River Toxics Management Plan (NRTMP).

Eighteen Priority Toxic Chemicals:

Chlordane
PCBs
Mirex/Photomirex
Dioxin (2,3,7,8-TCDD)
Dieldrin
Octachlorostyrene
Hexachlorobenzene
Tetrachloroethylene
DDT
Metabolites
Benz(a)anthracene
Toxaphene
Benzo(a)pyrene
Mercury

Benzo(b)fluoranthene
Arsenic
Benzo(k)fluoranthene
Lead
Chrysene/Triphenylene

Major environmental problems that have been discovered include:

Impairment of habitat and survival of aquatic life by polychlorinated biphenyls (PCBs), mirex, chlordane, dioxin, hexachlorobenzene, polynuclear aromatic hydrocarbons, lead, mercury, tetrachloroethylene, and pesticides

Fish tumors and other deformities

Metals/cyanides in sediments prevent open lake disposal of bottom sediments dredged from river

In 1989, Environmental Protection Agency (EPA) and New York State Department of Environmental Conservation (NYSDEC) identified the **Falls Street Tunnel** as responsible for over 50 percent of the aggregate point source loading (from the United States to the Niagara River) of the 10 persistent toxic chemicals targeted for significant reductions by the NRTMP. In 1993, the U.S. Department of Justice lodged a settlement in Federal Court that commits the City of Niagara Falls to treat all the dry-weather flow. Construction to divert the entire dry weather flow to the Niagara Falls wastewater treatment plant was completed on schedule, and treatment of the toxic chemicals has been confirmed.

Dupont/NECCO Park is only one of seven priority sites whose groundwater's flow, in part, into the Falls Street Tunnel. This unlined sewer, which is cut into the bedrock under the city, used to spew its toxic burden untreated into the river and was the largest single point source of river contamination. Since 1993, all dry weather flows go to the local treatment plant. However, most storm water overflows into the Niagara River untreated, carrying with it an unspecified amount of groundwater contaminants. Last year, these overflows occurred on 52 days and averaged 2.9-million gallons each.

But it's the groundwater flows to the New York Power Authority (NYPA) conduit drain system which are the most intriguing. This drain system serves the underground tunnels which feed the huge water reservoirs above the Niagara Power Project Generating Station (which spills into the river). The conduit drain crosses the Falls Street Tunnel at an unspecified location and the flows between the man-made systems are unknown. Depending on demands from the NYPA, water may flow toward the tunnel and treatment plant, or away toward the reservoir. Despite the fact that the drain conduit runs underneath the hazardous waste sites, sediment core samples have never been taken at the reservoir and the amount of contaminated groundwater finding its way through this conduit drain and, ultimately, into the Niagara River remains a mystery.

The EPA has detected chemicals in discrete fracture zones such as the 'G Zone'

180 feet under NECCO Park. Under Occidental's S-Area site, contaminants have been found even deeper in the 'J Zone'. This means that, in the area upstream of the Falls, contaminants are now below the level of the bottom of the river." No one has determined precisely which way these chemicals flow, but they could potentially be crossing under the river into Canada.

Over 5800 cubic meters (7600 cubic yards) of highly contaminated sediment was removed from Gill Creek, eliminating, among other pollutants, an estimated 0.2-kg-per-day (0.4-pound-per-day) load of PCBs to the Niagara River. This magnitude of loading is approximately 20 percent of the loading measured from the Niagara River to Lake Ontario.

EPA and NYSDEC identified 24 waste sites responsible for 99.9 percent of the estimated toxic loads from all sites and developed ambitious clean-up schedules for them. In June 1994, the agencies reported that remediations at eight sites have resulted in an estimated 25 percent reduction in these loads. By 1996, scheduled remedial actions will reduce the estimated toxic loads by 89 percent.

Approximately 22,000 cubic meters (29,000 cubic yards) of contaminated sediments were removed from Bloody Run Creek, also associated with leachate from the Hyde Park landfill. Substances removed included chlorobenzene, hexachlorobenzene, and low levels of dioxin. The creek was relined with clean gravel.

EPA has carried out inspections at Niagara River basin facilities for waste minimization activities on behalf of the Niagara Frontier Program. EPA targeted facilities that discharge either NRTMP priority toxins or toxics that are highly bio-accumulative. EPA's reports include descriptions of facility manufacturing processes, waste generation and environmental releases, waste minimization achievements to date, potential waste minimization opportunities, and facility response to the evaluation.

Results from applying a statistical model to the Upstream/Downstream Program data show that, with a few exceptions, there have been significant decreases in the concentrations and loads of most of the eighteen "priority toxics" over the eleven-year period between 1986 and 1997. The decreases in both the concentrations and loads for many of the eighteen chemicals exceeds 50%. For some of the eighteen chemicals, the reductions are due to the effectiveness of remedial activities in reducing inputs from Niagara River sources.

This conclusion is corroborated by analysis of the Biomonitoring Program data. For example, PCB concentrations in spottail shiners collected at Niagara on the Lake continue to decrease since 1993. In 1995 and 1996, concentrations were below the Great Lakes Water Quality Agreement specific objective for the protection of fish eating wildlife for the first time since the Niagara River young-of-the-year fish program began. Also, based on information from 1995 and prior, concentrations of several chemicals in the tissue of mussels placed adjacent to some known sources of contamination to the river are the lowest over the period of record.

Concentrations of priority toxic chemicals in cores collected from the depositional zone of the Niagara River in Lake Ontario have declined significantly. For most chemicals, the most dramatic declines occurred between 1960 and 1980.

** not an identified Superfund site*

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POPs

PAHs

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